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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
MOORE JR, MICHAEL J	

ART UNIT	PAPER NUMBER
2616	

DATE MAILED: 08/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Applicati n No.	Applicant(s)	
	10/016,866	O'RIORDAN, PETER J.	
	Examin r	Art Unit	
	Michael J. Moore, Jr.	2616	

-- The MAILING DATE of this communication appears on the cov r sheet with th correspondence address --

Peri d for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 May 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-38* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *16-38* is/are allowed.

6)☒ Claim(s) *1-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *06 March 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

Amendments made by Applicant to obviate the claim objections presented in the previous Office Action are proper and have been entered. These objections have been withdrawn.

Claim Rejections - 35 USC § 112

The amendment made by Applicant to claim **38** to obviate the rejection under 35 U.S.C. § 112 2nd paragraph presented in the previous Office Action is proper and has been entered. This rejection has been withdrawn.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims **1-7, 10, and 12-15** are rejected under 35 U.S.C. 102(e) as being anticipated by Mikkonen (U.S. 6,885,633). *Mikkonen* teaches all of the limitations of the specified claims with the reasoning that follows.

Regarding claim **1**, "a first router having a plurality of first virtual interfaces configurable to correspond selectively to one or more physical ports of the network system, the first router being configured to enable the first virtual interfaces when the

first router is assigned to be a designated router and to disable the first virtual interfaces when the first router is not assigned to be a designated router" is anticipated by node 100a (first router) of Figure 1 containing active physical network interfaces 110a and 110c as well as inactive physical network interfaces 110b and 110d that are configured to communicate with networks 10 and 20 as spoken of on column 3, lines 1-29.

"A second router having a plurality of second virtual interfaces configurable to correspond selectively to one or more physical ports of the network system, the second router being configured to enable the second virtual interfaces when the second router is assigned to be a designated router and to disable the second virtual interface when the second router is not assigned to be a designated router" is anticipated by node 100b (second router) of Figure 1 containing active physical network interfaces 110g and 110h as well as inactive physical network interfaces 110e and 110f that are configured to communicate with networks 10 and 20 as spoken of on column 3, lines 1-29.

"A supervisor module configured to assign a selected one of the first and second routers to be a designated router" is anticipated by means 120 (supervisor module) of Figure 1 that monitors the operation of nodes 100a and 100b as spoken of on column 3, lines 53-60 and regulates the activation of inactive interfaces upon a fault as spoken of on column 3, lines 30-44.

Lastly, "wherein each first virtual interface of the first router has a same Internet protocol (IP) address and media access control (MAC) address as each corresponding second virtual interface of the second router" is anticipated by the corresponding

physical interfaces 110 shown in Figure 1 that have same IP and MAC addresses (ex. 110a and 110e, 110b and 110g, etc.).

Regarding claim **2**, "wherein the first router is further configured to inform the second router about any change in a configuration of its first virtual interfaces when it is assigned as the designated router and to change the configuration of its first virtual interfaces to correspond to a change in configuration of the second virtual interfaces when it is not assigned as the designated router and the second router informs the first router of such a change in the configuration of the first virtual interface so that the first virtual interfaces have a same number and configuration as the second virtual interfaces" is anticipated by means 120 of Figure 1 present in nodes 100a and 100b (routers) that monitors the operation of nodes 100a and 100b, provides indication of operational state as spoken of on column 3, lines 53-60 and regulates the activation of inactive interfaces upon a fault as spoken of on column 3, lines 30-44.

Lastly, "the second router is further configured to inform the first router about any change in the configuration of its second virtual interfaces when it is assigned as the designated router and to change the configuration of its second virtual interfaces to correspond to a change in state of the first virtual interfaces when it is not assigned as the designated router and the first router informs the second router of such a change in the configuration of the second virtual interfaces so that the first virtual interfaces have a same number and configuration as the second virtual interfaces" is anticipated by means 120 of Figure 1 present in nodes 100a and 100b (routers) that monitors the operation of nodes 100a and 100b, provides indication of operational state as spoken of

on column 3, lines 53-60 and regulates the activation of inactive interfaces upon a fault as spoken of on column 3, lines 30-44.

Regarding claim **3**, "a control bus for managing the first and second router and the supervisor module and a data bus through which data is received and transmitted into and out of the physical ports of the network system" is anticipated by the communication link (control bus) between means 120 of Figure 1 as well as the data paths (data bus) shown in Figure 1 connecting networks 10 and 20 via physical interfaces 110.

Regarding claim **4**, "the supervisor module is further configured to poll the currently assigned designated router to determine whether the designated router has failed and when the designated router has failed, to assign another of the routers to be a designated router" is anticipated by means 120 of Figure 1 present in nodes 100a and 100b (routers) that monitors (polls) the operation of nodes 100a and 100b, provides indication of operational state as spoken of on column 3, lines 53-60 and regulates the activation of inactive interfaces upon a fault as spoken of on column 3, lines 30-44.

Regarding claim **5**, "the first router is further configured to enable the first virtual interfaces by setting a link state of each first virtual interface to an up state and to disable the first virtual interfaces by setting a link state associated with each first virtual interface to a down state, and the second router is further configured to enable the second virtual interfaces by setting a link state of each second virtual interface to an up state and to disable the second virtual interfaces by setting a link state associated with each second virtual interface to a down state" is anticipated by means 120 of Figure 1

present in nodes 100a and 100b (routers) that monitors (polls) the operation of nodes 100a and 100b, provides indication of operational state as spoken of on column 3, lines 53-60 and regulates the activation of inactive interfaces upon a fault as spoken of on column 3, lines 30-44.

Regarding claim **6**, "wherein the first and second interfaces each have an associated administrative state that is operable to be set by a user or the supervisor module to an up or down state to thereby enable or disable, respectively, the each virtual interface, wherein the first and second routers are each configured to maintain the same states for their interface's administrative states as the other router, and wherein each first and second virtual interface are only enabled when its corresponding link state and administrative state both have and up state" is anticipated by means 120 of Figure 1 present in nodes 100a and 100b (routers) that monitors (polls) the operation of nodes 100a and 100b, provides indication of operational state as spoken of on column 3, lines 53-60 and regulates the activation of inactive interfaces upon a fault as spoken of on column 3, lines 30-44.

Regarding claim **7**, "the first router is further configured to communicate to the second router a change of an administrative state of a selected first virtual interface to a down value when the first router is assigned as the designated router and to change the administrative state of the selected first virtual interface to a down state when the second router communicates that its corresponding second virtual interface's administrative state has been changed to a down state" is anticipated by means 120 of Figure 1 present in nodes 100a and 100b (routers) that monitors (polls) the operation of

nodes 100a and 100b, provides indication of operational state as spoken of on column 3, lines 53-60 and regulates the activation of inactive interfaces upon a fault as spoken of on column 3, lines 30-44.

Lastly, "the second router is further configured to communicate to the first router a change of an administrative state of a selected second virtual interface to a down state when the second router is assigned as the designated router and to change the administrative state of the selected second virtual interface to a down state when the first router communicates that its corresponding first virtual interface's administrative state has been changed to a down state" is anticipated by means 120 of Figure 1 present in nodes 100a and 100b (routers) that monitors (polls) the operation of nodes 100a and 100b, provides indication of operational state as spoken of on column 3, lines 53-60 and regulates the activation of inactive interfaces upon a fault as spoken of on column 3, lines 30-44.

Regarding claim **10**, "a plurality of virtual interface modules for interfacing with a plurality of physical ports, wherein the first and second virtual interfaces of the first and second routers, respectively, each correspond to one or more of the physical ports" is anticipated by physical interfaces 110 of Figure 1 that interface networks 10 and 20.

Regarding claim **12**, "wherein the first router and the second router are each configured to provide layer 3 switching when it is assigned as a designated router, and the supervisor module is configured to provide layer 2 switching" is anticipated by nodes 100a and 100b (routers) of Figure 1 as well as means 120 (supervisor module) of Figure 1 that perform switching of data and control traffic, respectively.

Regarding claim **13**, "wherein the first and second router appear together as a single router to other neighboring routers within the computer network" is anticipated by fault detection and the transparent transfer from a broken node to another node as spoken of on column 4, lines 30-33.

Regarding claim **14**, "wherein the supervisor module includes a first slot in which the first router is coupled and a second slot in which the second router is coupled" is anticipated by nodes 100a and 100b (routers) coupled to means 120 (supervisor module) in Figure 1.

Regarding claim **15**, "a first network system configured with a hot standby protocol and a second network system configured with a hot standby router protocol, wherein the first and second network systems are configured to act as an active router and a standby router within a hot standby router protocol group" is anticipated by the system shown in Figure 2 containing two node units 200 that provide backup for each other in case of a fault as spoken of on column 4, lines 5-20.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims **8, 9, and 11** are rejected under 35 U.S.C. 103(a) as being unpatentable over Mikkonen (U.S. 6,885,633) in view of Ammitzboell (U.S. 6,934,292).

Regarding claims **8, 9, and 11,** *Mikkonen* teaches means 120 of Figure 1 present in nodes 100a and 100b (routers) that monitors (polls) the operation of nodes 100a and 100b, provides indication of operational state as spoken of on column 3, lines 53-60 and regulates the activation of inactive interfaces upon a fault as spoken of on column 3, lines 30-44. *Mikkonen* does not teach enabling an interface based upon the creation of a VLAN.

However, *Ammitzboell* teaches a virtual router configuration in Figure 4 where redundant router devices that use same IP and MAC addresses interface to multiple VLANs.

At the time of the invention, it would have been obvious to someone skilled in the art to combine the VLAN teachings of *Ammitzboell* with the system of *Mikkonen* in order to emulate a single router in a VLAN environment that provides more efficient load sharing as spoken of on column 2, lines 22-36.

Allowable Subject Matter

5. Claims **16-38**, *as amended*, are allowable over the prior art of record.

6. The following is a statement of reasons for the indication of allowable subject matter:

Regarding *amended* claim **16**, *Mikkonen* teaches nodes 100a and 100b (first and second routers) of Figure 1 containing active physical network interfaces as well as inactive physical network interfaces (110a-110h) that are configured to communicate with networks 10 and 20 as spoken of on column 3, lines 1-29.

Mikkonen also teaches the corresponding physical interfaces 110 shown in Figure 1 that have same IP and MAC addresses (ex. 110a and 110e, 110b and 110g, etc.).

Mikkonen as well as the other prior art of record fail to teach "informing the second router of the selected one or more ports that correspond to the first virtual interface when the first router is assigned to be a designated router" as well as "informing the first router of the selected one or more ports that correspond to the second virtual interface when the second router is assigned to be a designated router".

Regarding claims **17-28**, these claims are further limiting to claim **16** and are thus also allowable over the prior art of record.

Regarding *amended* claim **29**, *Mikkonen* teaches nodes 100a and 100b (first and second routers) of Figure 1 containing active physical network interfaces as well as inactive physical network interfaces (110a-110h) that are configured to communicate with networks 10 and 20 as spoken of on column 3, lines 1-29.

Mikkonen also teaches the corresponding physical interfaces 110 shown in Figure 1 that have same IP and MAC addresses (ex. 110a and 110e, 110b and 110g, etc.).

Mikkonen as well as the other prior art of record fail to teach "inform the second router of the selected one or more ports that correspond to the first virtual interface when the first router is assigned to be a designated router" as well as "inform the first router of the selected one or more ports that correspond to the second virtual interface when the second router is assigned to be a designated router".

Regarding claims **30-36**, these claims are further limiting to claim **29** and are thus also allowable over the prior art of record.

Regarding *amended* claim **37**, *Mikkonen* teaches nodes 100a and 100b (first and second routers) of Figure 1 containing active physical network interfaces as well as inactive physical network interfaces (110a-110h) that are configured to communicate with networks 10 and 20 as spoken of on column 3, lines 1-29.

Mikkonen also teaches the corresponding physical interfaces 110 shown in Figure 1 that have same IP and MAC addresses (ex. 110a and 110e, 110b and 110g, etc.).

Mikkonen as well as the other prior art of record fail to teach "informing the second router of the selected one or more ports that correspond to the first virtual interface when the first router is assigned to be a designated router" as well as "informing the first router of the selected one or more ports that correspond to the second virtual interface when the second router is assigned to be a designated router".

Regarding claim **38**, this claim is further limiting to claim **37** and is thus also allowable over the prior art of record.

Response to Arguments

7. Applicant's arguments regarding *amended* claims **1, 6 and 7** have been fully considered but they are not persuasive.

Regarding *amended* claim **1**, Applicant argues that *Mikkonen* does not teach or suggest any type of virtual interface that is configurable to correspond selectively to one or more physical ports.

However, as no further explanation of the claimed "virtual interface" is provided in this claim, it is held that the active physical network interfaces as well as inactive physical network interfaces (110a-110h) of Figure 1 that are configured to communicate with networks 10 and 20 broadly anticipate this limitation.

Regarding *amended* claims **6 and 7**, Applicant argues that *Mikkonen* fails to teach or suggest any mechanism for changing an interface state to be the same as state information communicated by another router.

However, *Mikkonen* teaches means 120 for observing the operation of another network node and for producing an indication about the operational state of the another network node. This monitoring by means 120 allows activating of a previously inactive interface 110 (changing interface state in response to state information from other router) in the event of a node malfunction as spoken of on column 3, lines 30-64. It is therefore held that *Mikkonen* teaches this limitation.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Ma et al. (U.S. 6,856,591), Kanekar et al. (U.S. 7,006,431), Srikanth et al. (U.S. 6,556,547), Lamberton et al. (U.S. 6,754,220), and Wils et al. (U.S. 6,397,260) are other references considered pertinent to this application.

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael J. Moore, Jr. whose telephone number is (571) 272-3168. The examiner can normally be reached on Monday-Friday (8:00am - 4:30pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seema S. Rao can be reached at (571) 272-3174. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Michael J. Moore, Jr.
Examiner
Art Unit 2616

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SUPERVISORY PATENT EXAMINER